UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,148	01/08/2007	Dieter Voigt	284956-00006	1993

3795 7590 08/27/2010

ECKERT SEAMANS CHERIN & MELLOTT
600 GRANT STREET
44TH FLOOR
PITTSBURGH, PA 15219

EXAMINER	
WEINSTEIN, LEONARD J	
ART UNIT	PAPER NUMBER
3746	
MAIL DATE	DELIVERY MODE
08/27/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,148	VOIGT, DIETER	
	Examiner	Art Unit	
	LEONARD J. WEINSTEIN	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/31/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. The following comments are made with the understanding that the outlet for the pump (at least of figures 1 and 3) is defined by the large conduit connected to chamber 23, pursuant to the disclosure on page 4, line 29-32. The examiner also notes that in the embodiment of figure 5 the supply conduit 92, which corresponds to the conduit in communication with chamber 11 in embodiments of figures 1 and 2, conveys fluid at a positive pressure into chamber 66 pursuant to the disclosure on page 14 lines 2-7. Examples of some unclear, inexact or verbose terms used in the specification are:

a. Pg. 1-3 – The reference of DE 102 37 911 B4 has not been cited on an information disclosure statement or provided by the applicant and appears to be an incorrect patent number. The examiner could only find DE 102 37 911 A entitled "Use of polymers comprising vinylamine units as promoters for bulk sizing of paper with alkyl diketenes" which is not related to gear pumps of the type disclosed in the instant application.

b. Pg. 4, ll. 1-6 – The description of the drawings do not make it clear that the figures are separate embodiments given the fact that the figures only show the section of the pump housing that includes the displacement unit. A simple

statement such as "Fig. 4 represents a detail for a third embodiment of an oil regulating pump . . ." would clarify the instant disclosure. With respect to figure 5, the examiner suggests "Fig. 5: shows an alterative arrangement for the solenoid valve for increasing oil pressure of the embodiment of figure 4."

c. Pg. 5, ll. 20-23 – The wording appears to be incorrect in the disclosure of "for example due to a change of the number of revolutions of the internal combustion engine *and the, thus, at first changing conveying capacity of the pump*, the control piston 1, working as an oil pressure sensor . . . ."

d. Pg. 6 ll. 11-25 –

> *The centrifugal action of the oil in the radial bore 26 generates a radial externally directed, speed-dependent centrifugal pressure so that the conveying pressure, which acts from the pressure chamber 23 onto the radial bore 26 at its radial inner end is reduced by the centrifugal pressure. The centrifugal pressure, which is effectively only acting onto the differential pressure piston 20, because the conveying pressure which acts on both sides onto it compensates itself, exerts a speed-dependent additional force, which assists the control spring 16 and which depends also upon the dimension of the differential pressure piston 20.* This additional force enables a control function of the control piston 1 for the control pressure acting in the spring chamber 13 only with a correspondingly increased operational oil pressure biasing the effective surface 15.
>
> The issues with this section are as follows:
>
> i. The excerpt states that the centrifugal pressure reduces the pressure exerted by the conveying pressure on the radial inner end of the radial bore but then says that the centrifugal pressure only acts on the pressure piston. These are contradictory statements and are confusing.

ii. The section states that the conveying pressure acts on both sides of the pressure piston but how is this accomplished if it is being reduced by the centrifugal pressure? The examiner does believe that the conveying pressure acts on both sides of the differential pressure piston but the remainder of the section cited suggests that the "centrifugal pressure surface 24" is always acted on by a centrifugal pressure. As best understood by the examiner, this appears to be contradictory to the operation of the instant invention because:

(1) At low speeds the pressure in chamber 23 is greater then the pressure generated by the centrifugal motion of the bore 26 within the conveying wheel. Thus at low speeds the pressure in the radial bore is a positive pressure which causes fluid to flow through the bore 26, transverse connection 28, journal bolt 29, pressure connection 25, and acts on the centrifugal pressure surface 24 of the differential pressure piston.

(2) At high speeds the centrifugal pressure in the radial bore 26 is dominant over (greater than) the pressure exerted by the fluid in the pressure chamber 23, therefore fluid moves from the transverse connection 28 out of the bolt 29 under a suction pressure generated by the end of the radial bore 26 passing over the transverse connection 28 at a high speed. This causes a reduction

in pressure applied to the "centrifugal pressure surface 24" of the differential pressure piston 20.

As best understood by the examiner the centrifugal pressure generated by the radial bore 26 at a high speed is added to the conveying pressure that acts on the "reference pressure surface 21" of the differential pressure piston 20. This is how the centrifugal pressure acts with the spring 16. However the section of the specification cited suggests that the centrifugal pressure acts on the "centrifugal pressure surface" and is confusing because one of ordinary skill would not consider this as acting with the spring 16. The section is also unclear because it suggests that the "centrifugal pressure surface 24" is really only acted upon by the centrifugal pressure whereas as best understood by the examiner that surface would normally be acted upon by conveying pressure and only negatively acted upon by centrifugal pressure at high speeds.

The examiner notes that this understanding is based on the principle that at higher speeds the displacement of the pump will need to increase and therefore displacement unit 10 will need to move to the right side. In order to do this more pressurized fluid needs to be conveyed into the spring chamber 13 which means the control piston 1 would have to move to the right in order to be put the groove 18 in communication with the passage 14.

e. Pg. 8 ll. 16-20 –

It comprises a differential pressure piston 42 axially displaceable on it, which transfers the additional force resulting from the centrifugal pressure in the radial bore 26 of the conveying wheel 5, via a spring 43 and a spring abutment 44 to the control piston 41.

The section cited is cumbersome and confusing and should be revised.

Further the examiner notes that in the embodiment of figure 3, the spring 43 does not transfer the centrifugal pressure (suction created by centrifugal pressure when it is generated by the bore 26 at high speeds) but acts a damper for the motion of the control piston 41 which is attached and moves with the differential pressure piston. However the examiner acknowledges that if the spring abutment member 44 were fixed on the control piston 41 and the differential pressure piston were allowed to move (slide) relative to the control piston 41 then the cited disclosure would be correct. This is neither clear nor explicit from the drawings and disclosure, but the examiner will interpret the abutment member 44 to be integrally fixed onto the control piston.

f. Pg. 8 ll. 22-29 –

Due to the, now, soft coupling of the differential pressure piston 42 to the control piston 41 by the spring 43, *it is only a very small damping effect of the differential pressure piston 42 having a relative large area which is achieved so that the control piston 41 may answer to all occurring deviations form* the nominal operational oil pressure, in contrast to the differential pressure piston 20 of FIG. 1 which is rigidly coupled to the control piston 1.

The section cited is cumbersome and confusing and should be revised.

g. Pg. 8 ll. 34 - pg. 9 ll. 29 –

> With a low number of revolutions without an effective centrifugal pressure, the spring 43 is almost force-less and engages the differential pressure piston in a relieved manner. *With a centrifugal pressure increased with raising speed, the differential pressure piston 42 displaces under increasing tension of the spring 43 to the right, whereby a corresponding additional force is transferred to the control piston 41. As a desired consequence, the regulation of the operational oil pressure, that biases the effective surface 45, occurs in the above-mentioned manner only with a correspondingly raised pressure level.*

i. With respect to the spring 43 as best understood by the examiner, when speed is increased a greater force is applied to the left side of the piston 42 because of the centrifugal pressure from the bore 26 being added to the conveying pressure. This would result in a piston 42 applying a greater opposing force on the spring 43 which means the spring 43 would be compressed, whether the abutment member 44 or the differential pressure piston 42 were fixed on the control piston 41.

With either configuration the spring will be compressed when the differential pressure piston 42 moves to the right. When the differential pressure piston 42 moves to the right, if pressure piston 42 is fixed to the shaft and the abutment member 44 is not, then the spring 43 will remain in a relaxed state (since the pressure on the centrifugal pressure surface has been reduced) until the pressure piston 42 abuts the shoulder of the chamber surrounding the end of the control piston. At that point the spring 43 will be compressed. Likewise if the abutment member 44 is fixed to the shaft, when the differential pressure piston 42 moves to the right the spring will compress upon high pressure being applied to the reference

pressure surface 49 (less pressure on the centrifugal surface) until it is compressed to the point that the motion of the differential pressure piston 42 is transmitted to the control piston 41 (i.e. no longer being damped). In light of either configuration the excerpt cited should read --- the differential pressure piston 42 displaces under increasing compression of the spring 44 ---.

ii. With respect to the last sentence, the language and form used is cumbersome and confusing and should be revised.

h. Pg. 9 ll. 18-24 –

In the case of an increased oil pressure need of the internal combustion engine, for example for quickly actuating a hydraulic camshaft adjuster, a pressure relief may be attained at the centrifugal pressure surface 48 of the differential pressure piston 42, which is normally biased by the centrifugal pressure, by a solenoid valve 47, controlled by an engine control appliance.

i. First the disclosure of "the centrifugal pressure surface 48 of the differential pressure piston, which is normally biased by the centrifugal pressure" has the same issue as the part of disclosure cited in section 1.b above. The difference between the embodiments of figure 1 and figure 3 is that the differential pressure piston 42 is biased on a "centrifugal pressure surface 48" by pressure from conveying wheel 5 through a pressure connection 25 and a spring 43, and at certain times a solenoid valve that can reduce the pressure acting on the surface 48. However the same issue persists regarding when the centrifugal pressure surface 28 is acted upon by centrifugal pressure generated by conveying wheel 5

through the radial bore 26. At low speeds it appears that the conveying pressure predominant in the pressure chamber (23 in figure 1, not designated in figure 3) normally acts on the centrifugal pressure surface 48 because it is greater then the centrifugal pressure generated in radial bore 26. When the speed of the conveying wheel 5 increases the centrifugal pressure in the bore 26 increases causing a suction pressure to relieve the pressure being applied to the centrifugal pressure surface 48 and also be added to the conveying pressure that is applied to the reference pressure surface 49. Therefore the centrifugal pressure surface 48 appears to be normally acted on by the conveying pressure.

ii. Second the sentence is a run on sentence and should be revised. Based on the examiner's understanding of the instant application the following revision is suggested:

> In the case ~~of an increased oil pressure need of~~ where the internal combustion engine requires an increase oil pressure, for example for quickly actuating a hydraulic camshaft adjuster, a pressure relief may be attained at the centrifugal pressure surface 48 of the differential pressure piston 42. The pressure on the centrifugal pressure surface, which is normally biased by the ~~centrifugal~~ conveying pressure at low speeds, can be quickly reduced by a solenoid valve 47, controlled by an engine control appliance.

i. Pg. 9 ll. 24-28 –

The conveying pressure, which acts always onto the reference pressure surface 49 of the differential pressure piston 42, *shifts then the differential pressure piston 42 towards its stop 46 so that the spring 43 is in maximum stress*, whereupon an increased operational oil pressure of, for example, 5 bar is regulated independently from speed. A throttle 50 situated in the pressure connection 25, with controlled solenoid valve 47, effects a more

effective pressure reduction at the centrifugal pressure surface 48 of the differential pressure piston 42.

When the differential pressure piston 42 moves to the right hand side of the chamber it is in and abuts the stop 46, the spring 43 will be in maximum state of compressive stress. Since the stress on a spring could be either tensile or compressive, and given the recitation on page 8, lines 34-36 of the spring 42 being in tension when it is moved to the right appears to be in error, the section above should be amended to clearly recite that the spring is in compressive stress.

j. Pg. 9 ll. 24-28 –

A throttle 50 situated in the pressure connection 25, with controlled solenoid valve 47, effects a more effective pressure reduction at the centrifugal pressure surface 48 of the differential pressure piston 42.

The wording of the line cited suggests that both the throttle and the solenoid valve are in the pressure connection. The line should be revised; the examiner suggests "A controlled solenoid valve, along with a throttle that is situated in the pressure connection . . . ."

k. Pg. 12 ll. 1-5 – The recitation of "maximum stress" should recite --- maximum compressive stress ---.

l. Pg. 13 ll. 19 – The recitation of "pre-stressed control spring 97" should recite --- pre-stressed control spring ~~97~~ 96 ---.

m. Pg. 9 ll. 24-28 –

In this way, one avoids particularly a transfer of quick control movements of the control piston 69 through its elastic coupling to the differential

pressure piston 79, so that with an appropriate dampening it remains in almost unchanged position, thus enabling a stable regulation function.

This is a run on sentence with cumbersome language and should be revised.

Claim Objections

2. Claim 25 objected to because of the following informalities: the limitation "prove" should be amended to recite --- provide ---. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 11, by dependency claims 12-22, claim 23, by dependency claim 24, claim 25, by dependency claim 26, claim 27, by dependency claims 28-30, claim 31, by dependency claims 32-40, and claim 40, by dependency claims 41-44, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The independent claims including claims 11, 23, 25, 27, 31, and 40 (as well as dependent claims 15, 16, 18, 20, and 21 which don't include the limitations below but similar language for claimed elements) include all or some of the following limitations that do not clearly invoke or do not invoke 35 U.S.C. §112 sixth paragraph for a means plus function:

a. "conveying capacity adjusting means"

b. "means for applying an additional force"

c. "force applying means"

d. "rotary means"

e. "spring means"

The limitations are confusing because for example "rotary means" and "spring means" would appear not to suggest that 35 U.S.C. §112 sixth paragraph has been invoked since there is no clear recitation of a function and at least in the case of a "spring means" sufficient structure is claimed with "spring" to take the limitation out of 35 U.S.C. §112 sixth paragraph. However the claims use the same form of claim language for "force applying means" which is modified but significant structure in each claim however corresponds to the "means for applying an additional force" which would clearly seem to invoke 35 U.S.C. §112 sixth paragraph. The examiner also notes that the limitation of "force applying means" should be recited as introduced (i.e. "means for applying an additional force").

Given that "force applying means" corresponds to "means for applying an additional force" and therefore is modified by significant structure (radial bore, differential pressure piston), the limitation of "means for applying an additional force" will be considered as not invoking 35 U.S.C. §112 sixth paragraph. In addition, given the inconsistent and unclear claim language none of the elements including "means" in the claims will be considered under 35 U.S.C. §112 sixth paragraph.

The applicant is advised that in order to properly invoke 35 U.S.C. §112 sixth paragraph:

> Applicants and reexamination patentees before the USPTO have an opportunity and obligation to specify, consistent with these guidelines,

> when a claim limitation invokes 35 U.S.C. 112, sixth paragraph. A claim limitation will be presumed to invoke 35 U.S.C. 112, sixth paragraph, if it meets the following 3-prong analysis:
> (A) the claim limitations must use the phrase "means for " or "step for; "
> (B) the "means for " or "step for " must be modified by functional language; and
> (C) the phrase "means for " or "step for " must not be modified by sufficient structure, material, or acts for achieving the specified function.

MPEP §2181.

6. Claims 11, 23, 25, 27, 31, and 40 recite the limitation "force applying means." There is insufficient antecedent basis for this limitation in the claim. As best understood by the examiner the limitations will be considered to be --- means for applying an additional force – for the office action on the merits (examiner notes that in light of section 4 this is a matter of form).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 11-23, 27, 29, 30, and 40-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Voigt WO 03/05871.

a. **[claims 11-21]** Voigt teaches all the limitations as claimed for a an arrangement for a speed-dependent regulation of an oil control pump for pumping lubricating oil from an inlet space to a conveying space and then to an internal combustion engine with the embodiment of ***figure 3*** including:

[claim 11] a conveying capacity adjusting means (9, 11) for said lubricating oil supply, a control piston (elements 18, 19, 20, and 52 of element 51; "51/52") for generating a control pressure to provide a pressure bias for said conveying capacity adjusting means (9, 11), means for applying an additional force (55, 56, 57, 58, 59, 60, 61, 62, 64, 65; "fig. 4") that acts upon said control piston (51/52 via element 53 and 54), said means for applying an additional force (fig. 4) including rotary means 55 having a radial bore 61 in communication with said lubricating oil so that said lubricating oil is subjected to the speed-dependent centrifugal pressure in said radial bore 61, and a differential pressure piston (53 and 54 of 51; "51/54") having a first surface area 54 biased by said lubricating oil under a first pressure influenced by said centrifugal pressure and a second surface 53 area biased by said lubricating oil under a second pressure;

[claim 12] wherein said radial bore 61 extends in the direction of centrifugal force;

[claim 13] wherein said radial bore 61 is inclined to the direction of centrifugal force;

[claim 14] wherein said rotary means 55 is a conveying wheel 55 of said oil control pump (pump of figure 3);

[claim 15] comprising pressure communication means 16 (as applied from figure 1 to figure 3) for interconnecting said second surface area 53 with said conveying pressure space (chamber where element 55 is disposed) so that said second pressure is the conveying pressure;

[claim 16] wherein said first surface area 54 is in communication with the radial inner end of said radial bore 61 so that first pressure is the conveying pressure reduced by said centrifugal pressure (via element 60);

[claim 17] further comprising dampening means (17, 18) for dampening the movement of said differential pressure piston (51/52);

[claim 18] wherein said dampening means (17, 18) comprise throttle means 18 for throttling the flow of said lubricating oil moved by said differential pressure piston (15/52);

[claim 19] wherein said throttle means 18 comprise a throttle chamber (bore element 51 slides in), said differential pressure piston (51/52) comprising a third surface area (land defining groove 19) facing said throttle chamber (bore for element 51);

[claim 20] further comprising pressure relief means (65 as the pressure on element 54 is relieved through element 65 when enough centrifugal pressure is generated to suck fluid through element 61, past element 64 when element 56 is moved forward, and out element 65) communicating with said first surface area 53 of said differential pressure piston (51/52);

[claims 21] wherein said pressure relief means 65 comprise switching means (via element 57);

b. **[claims 11, 20, 22]** Voigt teaches all the limitations as claimed for a an arrangement for a speed-dependent regulation of an oil control pump for

pumping lubricating oil from an inlet space to a conveying space and then to an internal combustion engine with the embodiment of ***figure 5*** including:

[claim 11] a conveying capacity adjusting means (9, 11) for said lubricating oil supply, a control piston (elements 18, 19, 20, and 52 of element 51; "51/52") for generating a control pressure to provide a pressure bias for said conveying capacity adjusting means (9, 11), means for applying an additional force (27, 73, 74, 75, 76, 77, 79) that acts upon said control piston (51/52 via element 53 and 54), said means for applying an additional force 74 including rotary means 74 having a radial bore 76 in communication with said lubricating oil (via 27) so that said lubricating oil is subjected to the speed-dependent centrifugal pressure in said radial bore 76, and a differential pressure piston (53 and 54 of 51; "51/54") having a first surface area 54 biased by said lubricating oil under a first pressure influenced by said centrifugal pressure and a second surface 53 area biased by said lubricating oil under a second pressure;

[claim 20] further comprising pressure relief means (71, 72) communicating with said first surface area 53 of said differential pressure piston (51/52);

[claim 22] wherein said pressure relieving means (71, 72) comprise a solenoid valve 71;

c. **[claim 23]** Voigt teaches all the limitations as claimed for a an arrangement for a speed-dependent regulation of an oil control pump for pumping lubricating oil from an inlet space to a conveying space and then to an internal combustion engine with the embodiment of ***figure 3*** including:

a conveying capacity adjusting means (9, 11) for said lubricating oil supply, a control piston (elements 18, 19, 20, and 52 of element 51; "51/52") for generating a control pressure to provide a pressure bias for said conveying capacity adjusting means (9, 11), means for applying an additional force (fig. 4) that acts upon said control piston (51/52 via element 53 and 54), said means for applying an additional force (fig. 4) including rotary means 55 having a radial bore 61 in communication with said lubricating oil so that said lubricating oil is subjected to the speed-dependent centrifugal pressure in said radial bore 61, and a differential pressure piston 56 having a first surface area 64 biased by said lubricating oil under a first pressure influenced by said centrifugal pressure and a second surface 59 area biased by said lubricating oil under a second pressure, said differential pressure piston 56 being axially movable relative to said control piston (51/53), and spring means (57 for element 56; 17 for element 51/52) acting onto said differential pressure piston 56 and said control piston (51/52) so that said differential pressure piston 56 transfers said additional force to said control piston (51/52) via said spring means (57 – wherein the spring 57 of element 56 is integral to the operation of the piston and therefore generally integral to the piston 56 letting a pressure differential change with respect to element 51; all that is required by the claim is that spring is involved in the essential operation of the element that transfer pressure - centrifugal to element 51).

d. **[claims 27, 29, and 30]** Voigt teaches all the limitations as claimed for a an arrangement for a speed-dependent regulation of an oil control pump for pumping lubricating oil from an inlet space to a conveying space and then to an internal combustion engine with the embodiment of ***figure 3*** including:
[claim 27] a conveying capacity adjusting means (9, 11) for said lubricating oil supply, a control piston (elements 18, 19, 20, and 52 of element 51; "51/52") for generating a control pressure to provide a pressure bias for said conveying capacity adjusting means (9, 11), means for applying an additional force (fig. 4) that acts upon said control piston (51/52 via element 53 and 54), said means for applying an additional force (fig. 4) including a conveying wheel 55 of said oil control pump (fig. 3) for conveying said lubricating oil from said inlet space 10 to said conveying pressure space (chamber where element 55 is disposed), while imparting it a conveying pressure, said conveying wheel 55 having a radial bore 61 in communication with said lubricating oil so that said lubricating oil is subjected to the speed dependent centrifugal pressure in said radial bore 61, and a differential pressure piston (51/54) having a first surface area 54 biased by said lubricating oil under a first pressure influenced by said centrifugal pressure and a second surface 53 area biased by said lubricating oil under a second pressure, wherein said radial bore 61 of said rotating conveying wheel 55 communicates only in predetermined angular positions with said first surface area 53 of said differential pressure piston (51/54);

[claim 29] further comprising filter means for said lubricating oil when flowing to the second surface area 54 (oil in communication wit 54 must go through filter in the conduit communicating with the chamber where element 55 is disposed); **[claim 30]** throttle means 56 for said lubricating oil when flowing to said first surface area 54, and a differential pressure piston (53 and 54 of 51; "51/54") having a first surface area 54 biased by said lubricating oil under a first pressure influenced by said centrifugal pressure and a second surface 53 area biased by said lubricating oil under a second pressure;

e. **[claims 40-44]** Voigt teaches all the limitations as claimed for a an arrangement for a speed-dependent regulation of an oil control pump for pumping lubricating oil from an inlet space to a conveying space and then to an internal combustion engine with the embodiment of ***figure 5*** including: **[claim 40]** a pump housing means 78 a conveying capacity adjusting means (9, 11) for said lubricating oil supply, a control piston (elements 18, 19, 20, and 52 of element 51; "51/52") for generating a control pressure to provide a pressure bias for said conveying capacity adjusting means (9, 11), said control piston (51/52) including a control surface area 53 exposed to said conveying pressure, means for applying an additional force (27, 73, 74, 75, 76, 77, 79) that acts upon said control piston (51/52 via element 53 and 54), said means for applying an additional force 74 including rotary means 74 having a radial bore 76 in communication with said lubricating oil (via 27) so that said lubricating oil is subjected to the speed-dependent centrifugal pressure in said radial bore 76, and

a differential pressure piston (53 and 54 of 51; "51/54") having a first pressure influenced by said centrifugal pressure and a second surface 53 area biased by said lubricating oil under a second pressure;

[claim 41] wherein said conveying capacity adjusting means (9, 11) are displaceable as a displacement unit (9, 11) in said pump housing means 78 and comprise a unit surface area 9 exposed to said conveying pressure (via element 13 and 19);

[claim 42] interrupting means (71, 72) for interrupting said speed-dependent pressure regulation;

[claim 43] wherein said interrupting means (71, 72) comprise valve means 71 for interrupting said conveying pressure to be active onto said control surface area 53;

[claim 44] wherein said valve means (71, 72) comprise a solenoid valve (71);

Allowable Subject Matter

9. Claim 24 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims which are rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action on the base claim 23 from which claim 24 depends.

10. Claim 25 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

11. Claim 28 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims which are rewritten to overcome the rejection(s)

under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action on the base claim 27 from which claim 28 depends.

12. Claim 31 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD J. WEINSTEIN whose telephone number is (571)272-9961. The examiner can normally be reached on Monday - Thursday 7:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/

Supervisory Patent Examiner, Art Unit 3746

/Leonard J Weinstein/
Examiner, Art Unit 3746